CLAIMS

1. A surface-modified base matrix, which is comprised of a porous polymeric base matrix onto which branched hydrophilic polyhydroxy-functional polymers have been covalently attached, characterised in that the polyhydroxy-functional polymers are hyperbranched polymers that present a degree of branching (DB) of at least 0.2 and that each polymer has been tethered to the base matrix at two or more points.
2. A matrix according to claim 1, wherein the polymeric base matrix presents hydrophilic polyhydroxy-functional pore surface.
3. A matrix according to claim 1 or 2, wherein the polymeric base matrix is comprised of a cross-linked carbohydrate material.
4. A matrix according to claim 1 or 2, wherein the polymeric base matrix is comprised of one or more synthetic polymers.
5. A matrix according to any one of the preceding claims, wherein the degree of branching of the polyhydroxy-functional polymers is at least about 0.4, preferably at least 0.6.
6. A matrix according to any one of the preceding claims, wherein the hyperbranched hydrophilic polymer is a copolymer comprising a polyhydroxy-functional monomer cross-linked with an epoxide.
7. A matrix according to claim 6, wherein the epoxide is epichlorohydrin.
8. A matrix according to any one of the preceding claims, wherein the polyhydroxy-functional monomer is a polyol.
9. A matrix according to claim 8, wherein the polyol is a sugar or a sugar alcohol.
10. A matrix according to claim 9, wherein the polyhydroxy-functional monomer is selected from the group that consists of sucrose, glucose, sorbitol, mannitol and xylitol.
11. A matrix according to claim 10, wherein the polyhydroxy-functional monomer is sucrose.
12. A matrix according to any one of the preceding claims, which has been derivatised into a chromatographic matrix by attachment of functional groups to one or more of the hydroxy groups of the polymer.

13. A matrix according to claim 12, which is an ion-exchanger, and wherein said functional groups are charged groups capable of binding substances of the opposite charge.

14. A matrix according to claim 13, which has been derivatised into a cation-exchanger by attachment of sulfopropyl groups to one or more of the hydroxy groups of the polymer.

15. A matrix according to claim 13, which has been derivatised into a anion-exchanger by attachment of quaternary amino groups to one or more of the hydroxy groups of the polymer.

16. A matrix according to claim 12, wherein the wherein said functional groups are selected from the group that consists of affinity groups, hydrophobic groups and metal chelating groups.

17. Use of a branched hydrophilic polyhydroxy-functional polymer for surface-modification, which polyhydroxy-functional polymer is a hyperbranched polymer that presents a degree of branching (DB) of at least about 0.2, preferably at least about 0.4 and most preferably at least about 0.6.

18. A method of surface-modification of a porous base matrix, which comprises the steps of

(a) providing a porous polymeric base matrix that comprises functional hydroxy groups;

(b) activating the functional hydroxy groups on the base matrix by nucleophilic substitution;

(c) providing a hydrophilic branched hydroxy-functional polymer; and

(d) contacting the activated base matrix with said polymer under conditions allowing covalent coupling of the hydrophilic polymer to the base matrix,

wherein the polyhydroxy-functional polymer is a hyperbranched polymer that presents a degree of branching (DB) of at least about 0.2.

19. A method according to claim 18, wherein the porous base matrix provided in step (a) is a cross-linked carbohydrate, such as agarose.

20. A method according to claim 18 or 19, wherein the porosity of the base matrix provided in step (a) is at least about 90%, such as at least about 94%.

21. A method according to any one of claims 18-20, wherein an epoxide reagent is added in step (b).

22. A method according to any one of claims 18-21, wherein the hydrophilic hyper-branched hydroxyfunctional polymer is provided by polymerisation of a polyhydroxy-functional monomer with epichlorohydrin.

23. A method according to any one of claims 18-22, wherein the polyhydroxy-functional monomer is a polyol, such as a sugar or a sugar alcohol.

24. A method according to claim 23, wherein the polyhydroxy-functional monomer is selected from the group that consists of sucrose, glucose, sorbitol, mannitol and xylitol, preferably sucrose.

25. A method according to any one of claims 18-24, wherein step (d) is performed under alkaline conditions.

26. A method according to any one of claims 18-25, wherein the degree of branching of the hyperbranched hydrophilic polymer is at least about 0.4, preferably at least about 0.6.

27. A method of producing an ion-exchange matrix, which method comprises to modify the surface of a porous polymeric base matrix according to any one of claims 18-26 and an additional step of derivatisation of one or more of the hydroxy groups present on the modified surface with functional groups.

28. A method according to claim 27, wherein said functional groups are selected from the group that consists of ion exchange groups, affinity groups, hydrophobic groups and metal chelating groups.

29. Use of a matrix according to any one of claims 1-16 in chromatography.